BroadSword

2005 NDIA

GRIFFON AEROSPACE

griffon-aerospace.com
Madison, Alabama

Griffon Aerospace

An Aircraft Design Company Specializing

- Mannned/Unmanned AeroVehicle Desi
- Composite Systems Design/Manufactu
- Mechanical Systems Design Engineeri
- Composite Tooling Design/Developmer
- Composite Spacecraft Design
- Cryogenic Composite Design/Test
- Flight Test
- Mission/Flight Planning and Operations

Griffon is the Army's RPVT Contractor

Griffon manufactures and operates the Outlaw MQM-170A Remotely Piloted target for the U.S. Army and other training/system development customers.

The RPVT Contract provides to the Army Engineering Services and Target Design Support.

Griffon provides target/tracking support for numerous military agencies as the RPVT contractor.

What is the Purpose of UAV-T?

- To provide a UAV target to support developmental and operational testing for the Army's weapon system developers and the Army's Test and Evaluation Command.
- The UAV-T must work within the Army's existing TTCS-U test range control network to fulfill the Army's test objectives.
- UAV-T must satisfy the performance, form factor and TTCS-U control requirements to support upcoming Army weapon system testing.
- UAV-T is intended to serve as a generic Tactical Class UAV.

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UAV-T Physical Requirements

Propulsion – Pusher

Length – 4M +/-5% (13.8 Ft)

Wing Span – 5M +/-5% (17.2 Ft)

Fuselage Diameter - >.5M (1.6 Ft)

UAV-T Performance Requirements

Maximum Cruise – 115 KTAS (132 MPH); *200 mph Goal*

Minimum Cruise – 60 KTAS (69 Mph); *50 Goal*

Minimum Ceiling – 12,000 ft MSL; *23,000 MSL Goal*

Minimum Operating Altitude - <1000 ft AGL

Minimum Control Slant Range – 25 Km; *50 Km Goal*

Loiter Endurance – 1 hr on station

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BroadSword Team

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- Airframe/Systems Design
- Structural Design
- Tooling Design/Manufacture
- Prototype Development/Production
- Systems Integration
- Grounds Systems Development
- Flight Test Operations
- Systems Training

5-D

SYSTEMS
HARDWARE
SOFTWARE
INTEGRATION
TEST

- Systems Engineering
- ICD Development/Configuration Control
- O&M Manuals and Training Support

MICRO SYSTEMS, INC.

a HERLEY company

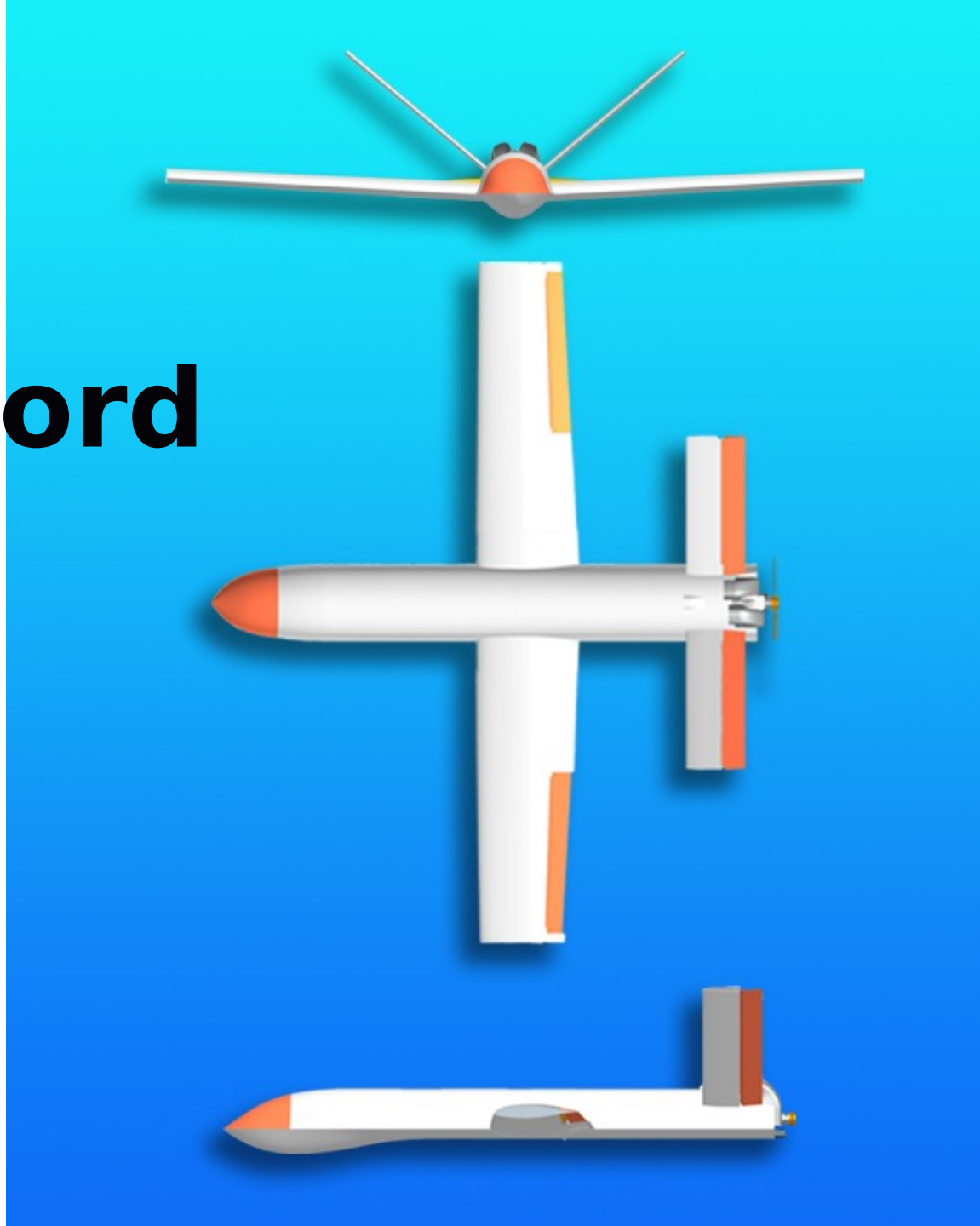
- TTCS Systems Integration
- CapLite Avionics Integration
- TTCS/Piccolo Software Integration
- Telemetry Stream Development

Cloud Cap Technology

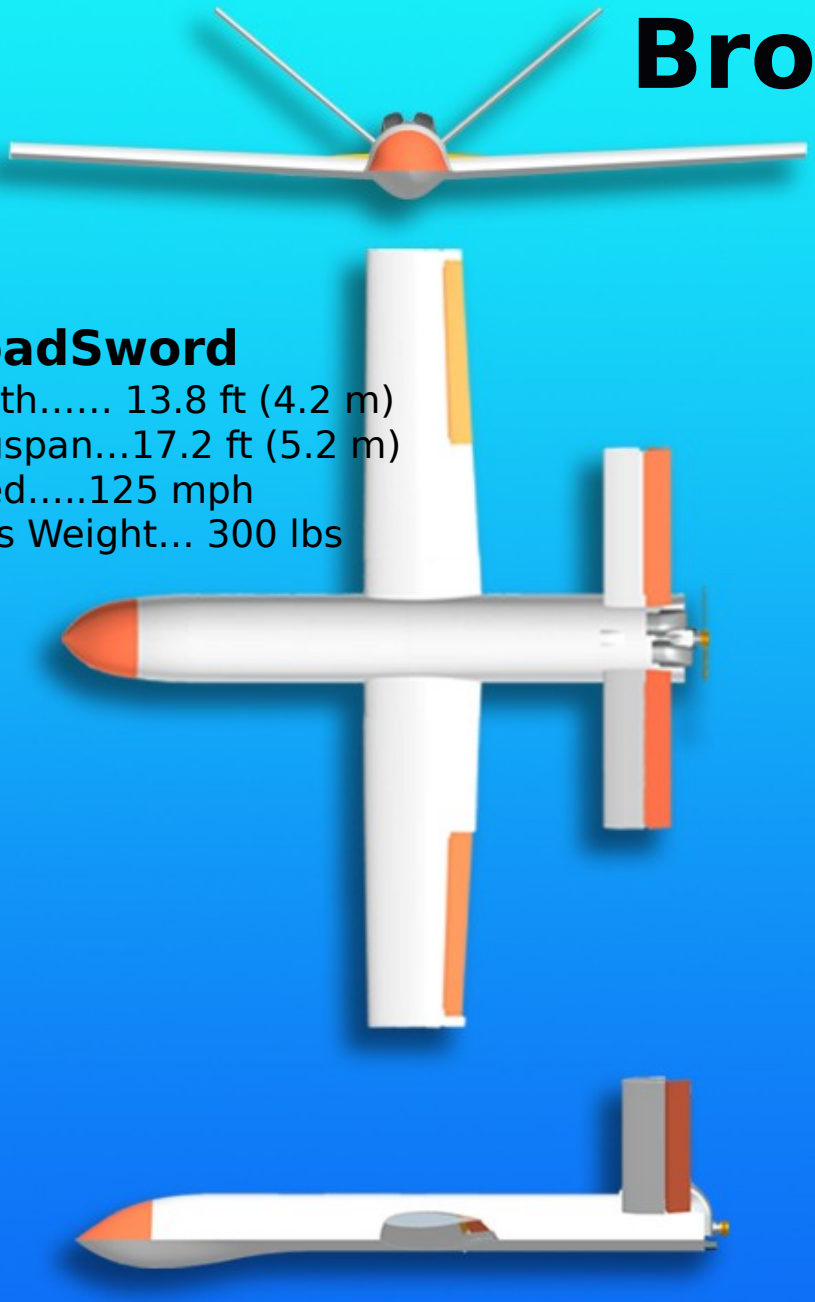
- Piccolo Autopilot System
- TTCS/Piccolo Software Integration
- TTCS/Piccolo Telemetry Stream
- Prototype Development/Production
- Flight Test Support

BroadSword

Length..... 13.8 ft (4.2 m)
Wingspan...17.2 ft (5.2 m)
Speed.....125 mph
Gross Weight... 300 lbs
Endurance.... 1.2 hrs



BroadSword and Outl



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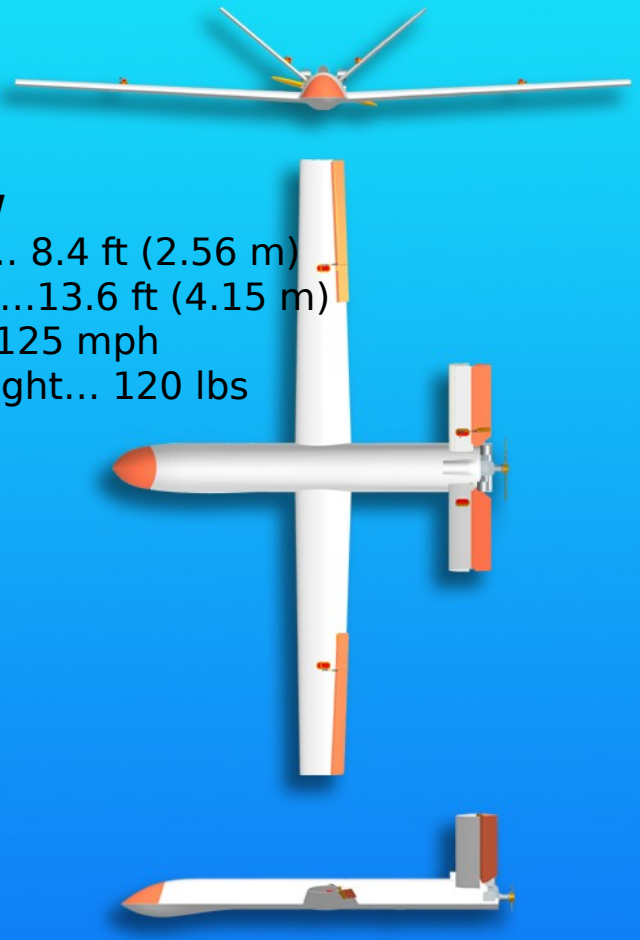

Outlaw
Length..... 8.4 ft (2.56 m)
Wingspan...13.6 ft (4.15 m)
Speed.....125 mph
Gross Weight... 120 lbs

BroadSword

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Overall Aircraft Configuration

Pusher Configuration per requirement

V-Tail

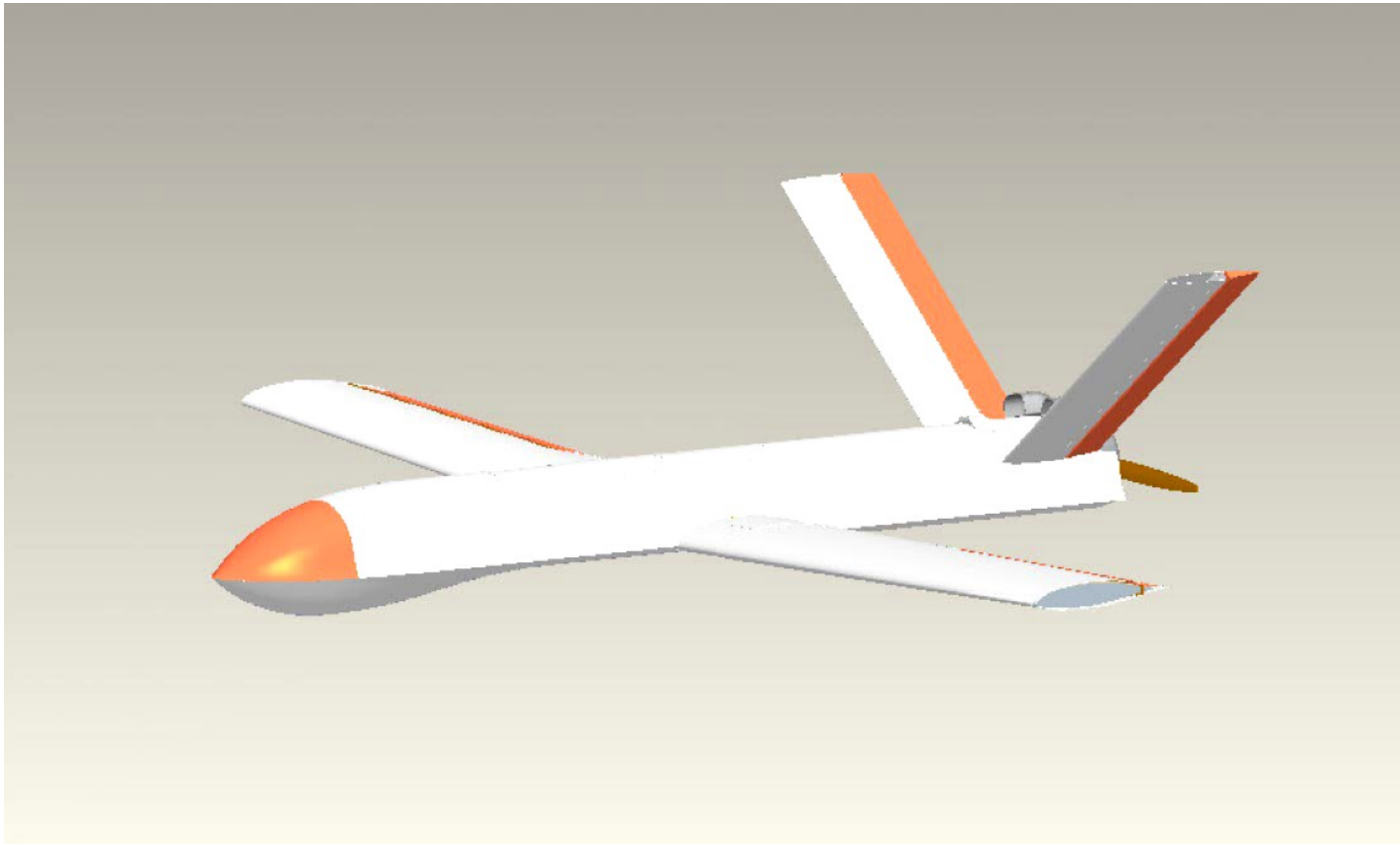
Removable wings to ease logistics

Large wing supports low cost launcher and belly landing recovery

Fuselage shaped to provide reduced radar reflectivity

Materials optimally selected to minimize cost and support the mission requirements

Avionics selected to provide compatibility with TTCS-U and waypoint navigation



Airframe Structures

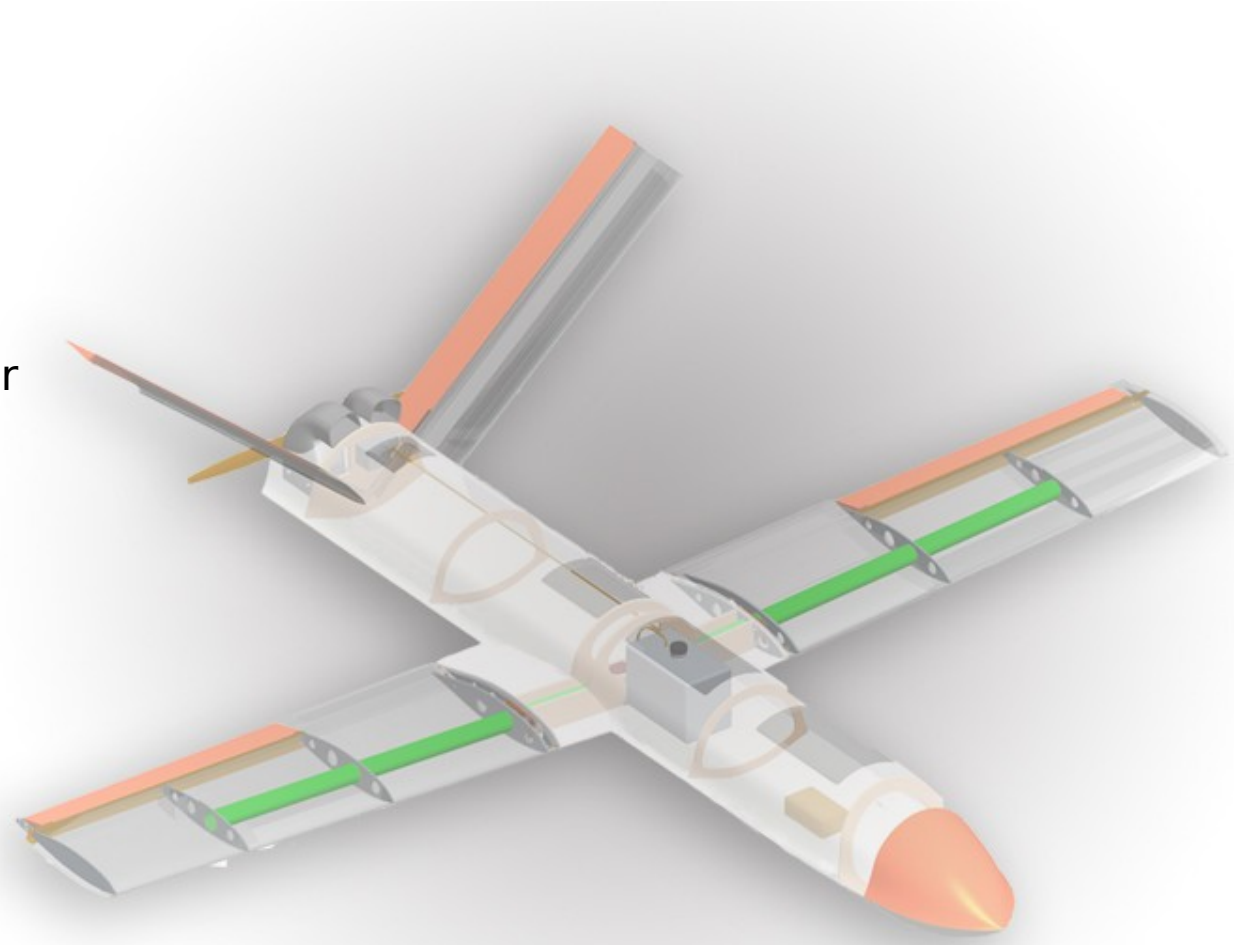
The airframe is an combination of composites, plywood, and aluminum.

Prototype fuselage and wing skins are carbon fiber prepreg with Nomex honeycomb core.

Bulkheads and ribs are CNC cut to match production part IML.

Wing spars slide into spar sockets to aid target transportability.

Fuselage nose and aft section strengthen to accept landing loads.



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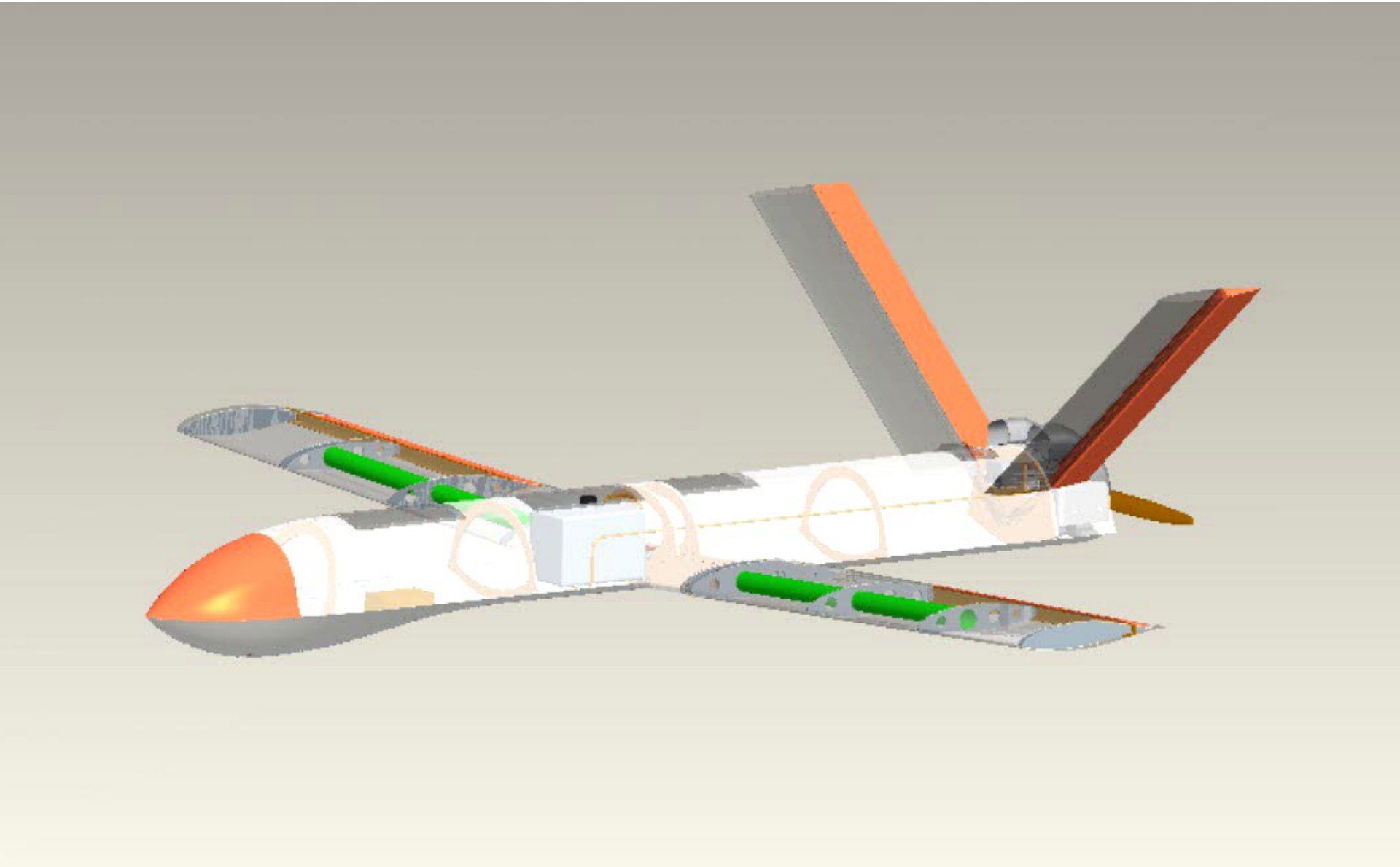


Propulsion

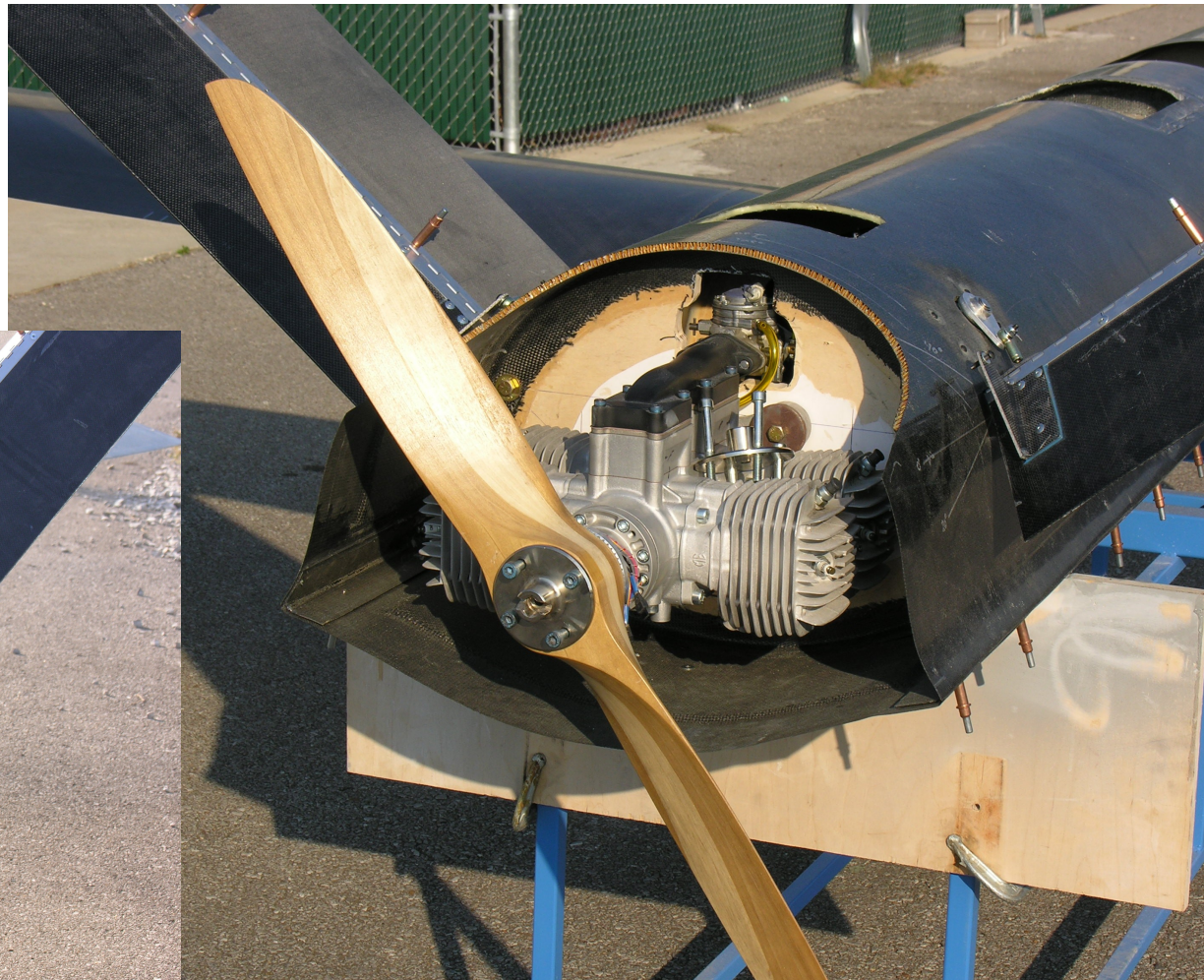
Engine selected as affordable, light power source

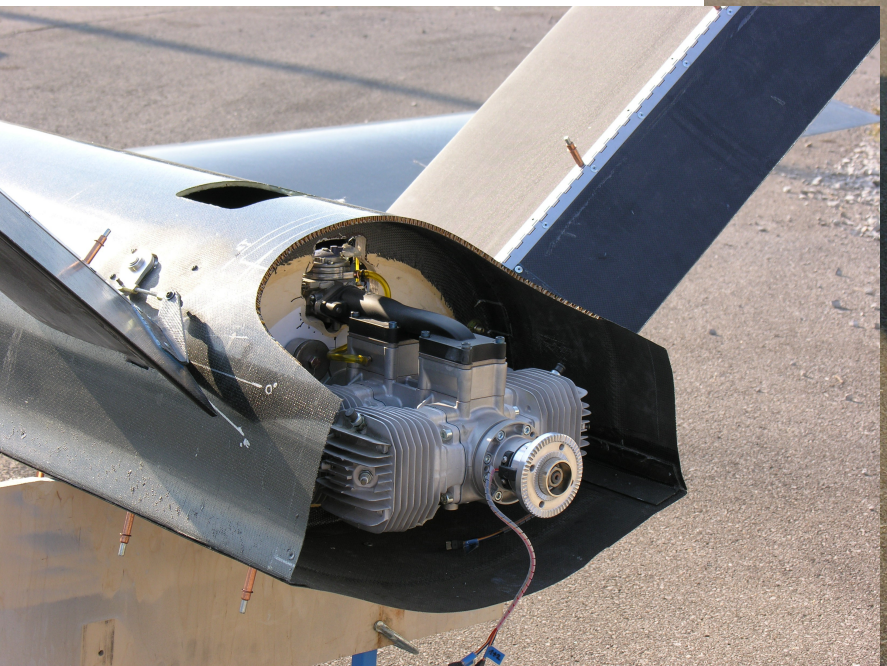
Configuration – 4 Cylinder 2-Stroke

Hp – 48-52 (installed)

Prop – 42x18 (Candidate)

Prop Stops Horizontal





Avionics and Flight Control

CAPLite is a marriage of two existing systems… the Common Avionics Package (CAP) and the Piccolo Autopilot.

MicroSystems and **Cloud Cap Technology** teamed to produce a system that maintains the functionality of the Piccolo Autopilot yet is compatible with the TTCS-U command/control system.

CAPLite provides waypoint navigation and full TTCS-U command compatibility.

Launch and Recovery Ops

Griffon is developing a pneumatic launcher to support BroadSword Ops

Primary recovery is via belly landing but emergency chute deploy is available

Griffon Flight Test/Operations

The BroadSword flight test program utilizes a spiral development approach to minimize risk.

Manual Flight Test Series

First flight test series to be completely manual at Redstone in December timeframe. These flights will evaluate the launcher, basic target system functionality, and flight characteristics.

Manual/Autonomous Flight Test Series

Second flight test series to be manual and autonomous using the Outlaw/Piccolo autopilot system. These flights will evaluate/establish autopilot gains.

TTCS-U Autonomous Flight Test Series

Third flight series to be CAPLite with TTCS-U control. These flights will test the TTCS-U command interface.

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